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ABSTRACT

Articles published in the journal "The Arithmetic Teacher" in 1954-55, 1969, and 1986-88 were analyzed to assess the development of the journal. Note is made of such factors as size, cost, and appearance. Of greater concern is the focus. In the 1954-55 issues, a pragmatic philosophy of education, with emphasis on the usefulness of mathematics and on developing meaning in mathematics instruction, was apparent. In 1969, a wider range of subject matter and the addition of recurring sections was noted. It appeared to be less theoretical and of interest to a wider audience. The importance of manipulative materials, the inclusion of geometry, and the role of games were each the subject of several articles. The changes by 1987-88 included an emphasis on problem solving, calculators, and computers. It was concluded that the journal is valuable and teachers can profit from reading earlier issues. (Twenty-two references are listed.) (MNS)

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HISTORICAL ANALYSIS OF THE ARITHMETIC TEACHER

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HISTORICAL ANALYSIS OF THE ARITHMETIC TEACHER

The journal chosen for review in this paper is The Arithmetic Teacher published from its inception in 1954 through the present by the National Council of Teachers of Mathematics (NCTM). The purpose of this paper is to discuss the development of the journal as perceived through investigation of journal articles written in 1954-1955, 1969, and 1987- 1989.

The very first Arithmetic Teacher, Volume 1, Number 1, was published in February, 1954. There was no preface or statement of general purpose or remarks about the agency of authorship. It was printed by the AMS Reprint Company in New York. This first journal contained four articles concerning learning theories and philosophies relative to teaching arithmetic. The journal was thirty pages long. Articles included were:

(1) The Revolution in Arithmetic

(2) Fostering Discovery with Children

(3) Dilemmas Confronting Teachers

(4) Creative Teaching Points the Way

The Journal was first published quarterly: February, April, October and December in 1954. By December, 1954, NCTM did include an information page identifying the editor and NCTM officers and directors. The cost of subscription was $1.50 per year to individuals and $2.50 per year for educational institutions. The preface page appearing in December, 1954, stated that the NCTM "has for its object the advancement of mathematics teaching at all levels of instruction." There was no request for submission of articles to the journal for publication.

Early issues of the journal, four published in 1954 and five published in 1955, placed considerable emphasis on theoretical concerns. The focus of the journal articles for those nine issues appeared to center on college professors and scholarly arithmetic teachers rather than the typical classroom teacher. The inaugural issue contained four articles and all four were written by college professors. All issues (1954, 1955) were austere in format and contained no commercial advertising. The only divergencies from straight content were a letter from the president of NCTM and several terse announcements about upcoming meetings.

The first journal, Volume 1, Number 1, February, 1954, contained a letter written by the President of NCTM, John Mayor. The letter contained an important statement of purpose for the fledgling journal. An exerpt from the letter is presented below.

> "This new publication should make professional reading on the teaching of arithmetic more accessible to elementary school teachers and as a result, the thinking of leaders in this field should be more readily reflected in school practice" (page 15).

The articles in 1954 and 1955, appeared to advance a pragmatic philosophy of education. In reference to pragmatic emphasis, Junge (1954) said, "As a result of these influences arithmetic curriculums are becoming much more realistic about what children need in arithmetic . . ." (page 1). Further, Brownell (1954) suggested that the learning and teaching of mathematics should not center on the transmission of past knowledge and

rote memorization, rather it should focus on mathematics which is functional and useful for the individual in the practical and social interactions of everyday life.

Brownell later stated that ". . . in order to affect life as it can and should, arithmetic has both a mathematical aim and social aim . . ." (page 4).

The 1954 and 1955 issues reflected a great respect for the scientific method of inquiry and accented discovery learning as evidenced by Thiele (1954) and Fehr (1954). Both authors stressed that meaning is not transmitted to children by teaching and textbooks or through telling and demonstrating. Meanings are discovered by pupils themselves through experimentation and construction of their own knowledge. In these instances the teacher assumes the role of guide.

1969

The second group of issues chosen for examination were published in 1969. By 1969 the journal had monthly issues each containing the statement:

> "The Arithmetic Teacher is devoted to the interest of elementary school teachers, students majoring in elementary education, and college and university professors responsible for teacher education programs for elementary school teachers".

An individual subscription was now $5.00 and included membership in

NCTM. The first issue published in January, 1969, Volume 16, Number 1, contained fifteen separate articles or short sections compared with the original 1954 journal containing four articles and one letter. Each 1969 issue contained editorial comments approximately one page in length which gave an overview of the contents for that particular issue. Articles were written by college professors as well as school teachers and graduate students. The 1954, 1955 issues however, were dominated by teachers at the college level.

Advertisements for teacher materials and textbooks were included in the 1969 issues but were not obtrusive. The issues still contained no color but did have a few pictures, very small diagrams, and illustrations.

Each 1969 issue contained a theme or area of focus. The theme for January, 1969 was problem solving while the theme for February, 1969 related to the teaching of rational numbers. If the theme was not readily apparent through reading the table of contents the editorial comments helped the reader determine the main thrust of the issue. These editorial comments served as good advance organizers for the reader.

Generally, in the 1969 issues there were nine or ten main articles of interest to elementary school teachers approximately three pages in length. In addition to the main articles, there were five topical sections which appeared throughout the 1969 volumes. The five sections which appeared in all 1969 issues are listed below with a brief synopsis:

(1) "Focus on Research" - research presented in this section was of both a quantitative and qualitative nature. One or two articles were generally included in this section.

(2) "Forum on Teacher Preparation" - articles included in this section were of general interest to those engaged in the preparation of elementary math teachers.

(3) "In the Classroom" - articles presented useful activities for practical use in the classroom. These articles were very short and would be of general use to teachers of elementary school children.

(4) "Reviews", - this section contained book reviews mostly on new math textbooks. Also listed were books recently published relating to problem solving and computers.

(5) "National Council of Teacher of Mathematics" - this was a section devoted to business of NCTM. Elections, conferences, etc. were described.

The 1969 Arithmetic Teacher appeared to print articles of interest to a wider audience than those that appeared in 1954 and 1955. In the 1969 issues, the journals carried articles of interest to those who taught mathematics at the elementary school level, articles of interest to the research-oriented teacher, and articles of interest to those working in teacher preparation programs at the college level. The articles in 1954-1955 appealed to those interested mainly in theoretical concerns.

Although not stated as explicitely as in 1954 and 1955 issues, certain trends in the teaching of mathematics were apparent in 1969. Some of those trends are noted below:

(1) The importance of using manipulatives in the teaching of mathematics (Nelson and Nelson, 1969; Traub, 1969; and Garner, 1969).

(2) The inclusion of geometry in the elementary math curriculum (Sair Ali Shah, 1969; Heard, 1969).

(3) Games have a part to play in the teaching of mathematics. (Milne, 1969); Garau, 1969).

1986-1988

The third and last group of issues of the Arithmetic Teacher to be examined were those from September, 1986 through May, 1988. After examining journals from 1954, 1955, and 1969, the most immediate response to the later issues is to notice the gigantic splash of color from advertisements. Further, the page size has increased to 8 1/2 X 11 which gives one the sense of reading a popular magazine instead of a professional journal. The masthead statement is as follows:

> ". . . It is a forum for the exchange of ideas and a source of techniques for teaching mathematics in grades kindergarten through eight. It presents new developments in curriculum, instruction, learning, and teacher education; interprets the results of research, and in general provides information on any aspect of the broad spectrum of mathematics education appropriate for preservice on in-service teachers . . ."

A $35.00 membership fee in NCTM will gain subscription to The Arithmetic Teacher or Mathematics Teacher both published by NCTM. Individual cost for subscription to The Arithmetic Teacher is $13.00.

The special sections which appeared in the 1969 issues are for the most part gone. The 1969 issues sections entitled: Focus on Research,

Forum on Teacher Preparation; and In the Classroom are not found in the 1986-1988 issues. There are certain pages that reappear in each of the 1986-1988 issues. A brief description of each section follows:

(1) "One Point of View" is an editorial, sometimes controversial in nature. This section is always one page in length.

(2) "Readers Dialogue" contains letters commenting on articles or the sharing of ideas in relationship to teaching. This section is always one page in length and usually contains several diagrams.

(3) "Estimation and Mental Computation" contains ideas useful for teaching the approximation of arithmetic answers without the use of paper and pencil. This section also contains a "Tip Board" of short teaching tips and, or extension activities. This section is approximately two pages in length.

(4) "Ideas"-this section contains short ideas for teachers such as games, brain teasers, and puzzles. Answers to problems are supplied. This section provides approximately four pages, suitable for immediate duplication and classroom use.

(5) "Research Report"-this one page section provides a non-quantative synopsis of a recent research project. The implications of the study are briefly elaborated.

(6) "Problem Solving Tips for Teachers" has a recipe format. Try this in order to teach that is the general organization. This section is approximately three pages in length and contains four to six different activities or tips for teaching.

(7) "Computer Corner" demonstrates ways to use BASIC and LOGO

programming to teach a variety of mathematical procedures. This section usually involves two pages of programs and activities.

(8) "Computer materials" is approximately seven pages in length. This section reviews computer materials, new books, and other materials.

In the 1986, 1987, and 1988 issues of The Arithmetic Teacher, several beliefs about the teaching of mathematics were noted. Many of these beliefs were not explicitely stated but were evidenced by the type of articles chosen for publication as well as by other writings of the NCTM appearing in other sources.

In May, 1988 from the "One Point of View" section of The Arithmetic Teacher (Romberg, 1988), five goals for all students were proposed:

(1) Becoming a mathematical problem solver,

(2) Learning to communicate mathematically,

(3) Learning to reason mathematically,

(4) Being confident in one's own ability,

(5) Learning to value mathematics.

The NCTM also strongly endorses the first recommendation of An Agenda for Action (NCTM 1980, 2). This recommendation is that problem solving be the focus of school mathematics.

The belief that computers and calculators should play a large part in assisting students to learn mathematics is evidenced in every 1986-1988 issue. The NCTM November, 1987, News Bulletin contains an official NCTM statement on the use of computers in the classroom.

Summary

Overall evaluation of The Arithmetic Teacher demonstrates that it is a highly valuable journal for arithmetic teachers. Further, teachers should not limit themselves to reading later issues. On the contrary, there is a wealth of information in issues going right back to the beginning. The journal has evolved to meet the needs of the evidently growing membership of the National Council of Teachers of Mathematics. The Council wants to assist and influence classroom teachers; thus, the format of and content of the journal reflect a focus in that direction. Like its sister publication, Mathematics Teacher, it has gone splashy and is repleat with colorful advertising. As mentioned in the review of Mathematics Teacher this might well reflect the realities of the times relative to publication costs and desire to serve a large market. On the whole, the NCTM is to be commended for guiding and supporting production of this fine journal.

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